VITERBI DECODER WITH SURVIVOR BITS STORED TO SUPPORT LOOK-AHEAD ADDRESSING

Cross- References To Related Applications

[01]   The present application is related to commonly assigned U.S. Patent ,now U.S. Patent No. 7,197,686, Application Serial Number 10/683,563 entitled "RECONFIGURABLE BIT-MANIPULATION NODE" filed on October 10, 2003, the disclosure of which is hereby incorporated by reference in its entirety for all purposes.

Background Of The Invention

[02]   The present invention generally relates to a method for decoding convolutional codes and, more specifically, to a system and method for decoding convolutional error correcting codes using a maximum-likelihood decoding algorithm.

[03]   Error correcting codes are well known. Early codes included parity codes and block codes where syndromes are generated to help determine whether the received data stream at a receiving device is the same as the data stream that was sent by a transmitting device. Parity codes operate at the byte or word level while block codes operate on relatively large (typically, up to a couple of hundred bytes) message blocks. Recently, convolutional codes have enjoyed increasing popularity in both magnetic recording applications and communication systems, such as optical, wireline and wireless communication systems. In contrast to block codes, convolutional codes operate on serial data, one or a few bits at a time. The Viterbi algorithm is a widely used convolutional code algorithm and is of the type known as a maximum-likelihood decoding algorithm.

[04]   In a typical system requiring forward error correction, the transmitting device uses an encoder to encode a stream of data before transmission through the channel in accordance with certain key parameters. Specifically, a constraint length (denoted as 'k'), a code rate (denoted as r = 'number in' divided by 'number out') and